REMARKS

The subject invention relates to an optical coherence tomography (OCT) system for obtaining images within the eye of a patient. The specification discloses two inventive aspects of the system. The first aspect is the use of polarization control to improve detection of the OCT signal. The second aspect relates to elimination of motion artifacts using a low frequency component of the output signal. The Examiner indicated that all of the claims directed to the second aspect of the disclosure were allowable and rejected the claims directed to the first aspect of the disclosure.

In response to the Office Action, Applicant's have rewritten allowable claims 2 and 22 with the subject matter of claims 1 and 21 respectively. The only modification is that the limitation specifically related to the first invention (operating the detector in "a noise-optimized regime") has been omitted. In view of the above, it is believed that claims 2 to 8, 16 to 20, 22 to 24 and 26 to 30 are in condition for allowance.

The only independent claims remaining are claims 1 and 21. As discussed below, these two claims have been amended to address the prior art rejection made by the Examiner.

In the Office Action, the Examiner objected to claims 5 and 12 as not having a period to end the claims. This typographical error has been corrected. The Examiner also rejected claims 21 and 26 for including the phrase "comprising the unordered steps of." Applicant has deleted the word "unordered" which should overcome this rejection.

In the Office Action, the Examiner rejected claims 1 and 21 as being anticipated by Biegen (4,869,593). Biegen discloses an interferometric surface profiler. In the various embodiments, the source light is directed to a polarizing beam splitter which divides the light along sample and reference paths. The light returning from these paths is recombined at the splitter and directed to an imaging device for measurement. In numerous instances throughout the specification, Biegen specifically recites that the polarizing beam splitter directs about one half of the beam intensity down the sample arm and the other half down the reference arm. (See column 5, line 24; column 6, line 55, column 9, line 8). Moreover, with respect to the Figure 3 embodiment relied upon by the Examiner, Biegen states that the input polarization should be selected based on the sample (test surface) reflectivity in order to equalize the beam intensities in both arms. (See column 7, line 35+). There are a number of reasons why the Biegen system is arranged to equalize the intensity of the beams in both arms. One reason is that the device is

intended for surface profilometry wherein the sample is typically highly reflecting (e.g. has a reflectivity similar to the reflector in the reference arm).

In contrast, retinal tissue is highly diffuse in its scattering and therefore produces a very low intensity in the returning sample beam. Therefore, in the subject system, the power splitting ratios need to be configured quite differently from Biegen in order to optimize measurement. For example, as set forth in the subject application at page 14, line 8, it is preferable that the source signal polarization state be oriented such that about 95% of the source intensity is directed along the sample path and the remaining 5% is directed along the reference path. This signal splitting ratio may be varied by rotating the source polarizer 40. Further, it is also desirable to orient the polarizer 80 (which is located between the beam splitter and the detector) so that about 95% of the power returning from the sample and 5% of the power returning from the reflector is passed to the detector (See specification at page 15, line 20) This signal splitting ratio may be varied by rotating the source polarizer 80. By careful control of these transmission ratios, the detector can be operated in a noise-optimized regime.

Applicant has amended claims 1 and 21 to require that the first polarizer (80) is oriented with respect to the beam splitter so that about 95% of the light returning from the sample arm and 5% of the light returning from the reference arm are directed to the detector. It should be noted that the Figure 3 embodiment of Biegen includes a polarizer (analyzer 67) located between his beam splitter and his detector. Biegen states that this analyzer is provided to cause the returning wavefronts to interfere (Biegen, column 8, line 16). Based on Biegen's desire to equalize the beam intensities in both arms, one skilled in the art would likely assume that this beam splitter is arranged to pass equal amounts of light from the sample and reference paths. In any event, one skilled in the art would not understand that the Biegen polarizer 67 should be oriented to so that 95% of the light returning from the sample arm and 5% of the light returning from the reference arm are directed to the detector. Accordingly, it is respectfully submitted that the patent to Biegen fails to teach or suggest the invention as now claimed.

In view of the above, it is respectfully submitted that amended independent claims 1 and 21 define patentable subject matter and allowance thereof, along with the claims depending therefrom is respectfully solicited.

Respectfully submitted,

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